Installation Instructions and Service Manual

Model 75LP (Low Profile) Actuator for Trailer Brakes*

7500 lbs Capacity - Disc Brake Ready

Part #47228X/47227X

*US Patent No. 6,375,211

MODEL 75LP ACTUATOR INSTALLATION INSTRUCTIONS
IMPORTANT: READ AND UNDERSTAND THE ENTIRE INSTRUCTION/ASSEMBLY PROCEDURE BEFORE INSTALLING YOUR BRAKES AND ACTUATOR.

The Model 75LP works by the "surge" or "push" of the trailer toward the tow vehicle. This automatically synchronizes the trailer brakes with the tow vehicle axle brakes. When the trailer pushes against the tow vehicle, the actuator telescopes together and applies the force to the master cylinder, supplying hydraulic pressure to the brakes. The built in dampening shock absorber retards the telescoping shock against the hitch ball by depending on the brake fluid in the master cylinder. Low levels of brake fluid will signal the tow vehicle operator to add brake fluid via hitch ball knocking.

Brake laws sometimes are minimum standards and you may wish to add additional brakes to your trailer. Read your tow vehicles owner's manual on towing capacity and other towing recommendations before installing brakes or this actuator.

The Model 75LP Actuator is completely assembled and ready to weld into place.

1. Hydraulic brake lines should be installed on the trailer as described in the installation manual supplied with the brakes. Note: Some disc brakes require the use of flexible brake lines at the connection POINT on the brake caliper. Follow brake manufacturer instructions.

2. Tie Down's actuators feature a shock dampener that uses brake fluid from the master cylinder. The dampener must be primed before bleeding or using trailer. To prime the dampener, fill the master cylinder with DOT 3 brake Fluid. Push the coupler into the housing and slowly pull out 3 times, then refill master cylinder.

3. Use only DOT-3 heavy-duty hydraulic fluid in the Model 75LP actuator. Use a pressure type brake bleeder to bleed brakes. (This type of brake bleeder is available at your local automotive jobber.) Follow manufacturer's directions. Or, manually bleed the brakes using a heavy-duty flat blade screwdriver inserted in the hole provided on top of the actuator near the front. Insert the screwdriver and use a pumping action to activate the master cylinder in order to bleed the brakes. See page 8 for more details.

   To bleed master cylinder and brakes, the bleeder hose must be attached to the highest (top) valve on the caliper, on first wheel cylinder to be bled; if tandem axle trailer, bleed closest axle first, and the closest brake on that axle first. Use a loose end of hose from the bleeder valve submerged in a glass container of brake fluid to observe bubbling (hose must be submerged into clean brake fluid to keep air from traveling back into the brake cylinder). Loosen the bleeder screw located in the wheel cylinder one turn, the system is now open to the atmosphere. The bleeding operation for that brake is complete when bubbling stops. Be sure to tighten bleeder screw securely. Each wheel cylinder must be bleed until all air is out of the lines. Replenish the brake fluid during the bleeding process so the level does not fall below half full level in the master cylinder reservoir. When bleeding and testing is completed, make sure master cylinder is filled to 3/8" below the top of the reservoir and filler cap is securely in place.

4. Check with your state motor vehicle department for laws concerning minimum trailer brake requirements. Some states may require brakes on all axles.

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5. Road test trailer a short distance to activate the actuator several times. This will fill the reservoir of the master cylinders shock dampening system. Check fluid level again. Remember, low brake fluid levels will result in hitch ball knocking.

6. When testing is completed, make sure master cylinder is filled to 3/8" below the top of the reservoir and filler cap is securely in place. Road test again to make sure brakes work properly.

RATED CAPACITY: Maximum Actuator Capacity: 7500 lbs. Gross Load, 750 lbs. Maximum Tongue Load

The actual in-service rating is limited to that of the ball and hitch being used or the trailer manufacturer's G.V.W.R. shown on the certification label, whichever is lower (Note: GVWR is the Gross Vehicle Weight Rating which includes the trailer and the load weight as a Total Gross Weight).

HITCHING TRAILER

1. The vehicle, towing hitch and ball must have a rating equal to or greater than trailer GVWR.

2. Model 75LP will accept 2" trailer hitch balls rated for 7,000# or more only. Trailer balls larger than 2.00" or out of round will not fit the coupler or may result in coupler failure. Balls smaller than 1.970" can cause shock loading and sudden disconnection. Make certain ball latch is in correct position to retain the hitch ball. Push latch back until safety latch engages plate below latch. Insert safety pin into forward hole as a safety lock for the hitch ball coupler prior to towing. Do not tow trailer if coupler is damaged.

3. Connect safety cables or chains using crossed pattern under tongue, or follow trailer manufacturer's directions.

4. Connect actuator breakaway cable S-hook to the tow vehicle only. Do not connect S-hook to the safety cables or chains.

5. The breakaway system is designed to only operate after the trailer detaches from the tow vehicle and the safety chains have failed. The breakaway is not a parking brake. Do not use as such.

6. If the breakaway is accidentally applied while un-hitching, insert a flat bladed screwdriver into the spring clip slotted hole under the actuator and pry down to release.

7. Any control devices that restrict operation of the actuator cannot be used. This includes certain sway control devices. The actuator must be free to telescope in response to braking requirements.

8. Equalizing or weight distributing hitches may be used, allow six to eight inches free chain length.
   DANGER: Tongue weight beyond rating limits will interfere with performance of actuator, and braking system, and the tow vehicle.

9. The actuator is designed for use with Free-Backing trailer brakes. To block braking action, (in order to back up) with other types of brakes, use an electric solenoid. For trailer movement when brakes are not required, place the safety pin in the upper hole on the side of the actuator to block movement of the actuator. DANGER: Failure to remove pin will also prevent forward braking. Pin must be in the lower, forward hole as a safety lock for the hitch ball coupler latch when towing at all times.

DIRECTIONS - VEHICLE WIRING - Free Backing Brake Solenoid

1. Disconnect trailer hitch and any wiring connectors from the vehicle.
2. Connect a 14 gauge wire to the backup (reverse) light wire of the vehicle. This wire should be of sufficient length to attach to the existing vehicle/trailer wire receptacle. The end of this wire will require a female end that will match the solenoid male connector wire.
3. For ease of use, tape or band the end of the reverse light wire to the vehicle's trailer electrical connector.

MAINTENANCE

1. Always check the brake fluid reservoir before using trailer. Make sure it is at least half full. If not, re-fill to 3/8 inch below the top of the reservoir with DOT 3 brake fluid. Check for leaks and repair as required. Never reuse brake fluid.
2. To extend coupler and ball life, coat both with a thin coating of grease. This will also eliminate squeaking. Wipe clean and renew film each time trailer is used.
3. Examine the actuator for bent parts or wear each time the trailer is used. Replace parts as necessary.
4. There are no user adjustments on the actuator.
5. Actuator travel (shown by coupler roller path) over one inch indicates a need to adjust the brakes or add fluid to the reservoir or a need to bleed the brakes and check connections for leaks. Adjust per instructions found in brake installation manual. In general, back-off adjusters on drum brakes from locked position, as required. Adjust Free-Backing brakes by rotating in forward direction only. Failure to adjust may result in loss of braking. Disc brakes do not require adjustment, check for pad wear.
6. While towing, if the actuator appears to be knocking against the hitch ball while starting or stopping, check brake fluid reservoir and fill if below 3/8" full from the top. Dampening shock absorber requires sufficient brake fluid in order to retard movement against hitch ball during towing.

WARNING
Actuator and brakes should always be flushed with fresh water after using trailer in corrosive conditions. This includes salt water, fertilizers and other corrosive materials. Before storing trailer remove brakes and clean thoroughly. It is also wise to repack the bearings at the same time. Failure to properly and adequately maintain the actuator could cause serious damage, injury or death.

WARNING
The breakaway system is not designed to operate if the trailer does not separate completely from the tow vehicle, or if the tongue goes under the rear of the tow vehicle.

WARNING
In the event that the breakaway system is used, check all system components (cable, S-hooks, etc.) for proper working order. Replace any damaged parts with genuine Tie Down parts only.

WARNING
When re-setting the break a way system keep hands and fingers clear as you re-set the mechanism, hydraulic pressure held in the system may cause the assembly to snap back suddenly.

WARNING
AVOID sharp turns, which can cause the actuator to bind or jackknife against the tow vehicle or cause a bend in the tongue. Either can damage the actuator causing brake failure. AVOID towing trailer across large bumps or dips that may over stress the connection between the trailer and tow vehicle, as this could result in damage to the actuator.

WARNING
DO NOT REUSE BRAKE FLUID. Always use fresh DOT 3 fluid from a fresh container. Failure to maintain proper levels of fluid in the reservoir will cause brake failure.

WARNING
Failure to install the hitch pin before towing can result in accidental opening of the coupler hitch latch which can lead to the trailer coming off of the hitch ball causing serious damage, injury or death. If pin will not fit into the front lower hole, the coupler is not attached properly. Re-set coupler on hitch ball.

WARNING
A minimum of 5% tongue weight and a maximum 10% tongue weight of the trailer GVWR must be located on the hitch ball. The Trailer tongue should be parallel to the ground. Too much weight can cause premature brake actuation and loss of control of the towing vehicle. To little tongue weight can cause the trailer to fishtail, resulting in loss of control of the tow vehicle and trailer (total trailer weight GVWR includes weight of the trailer plus load).

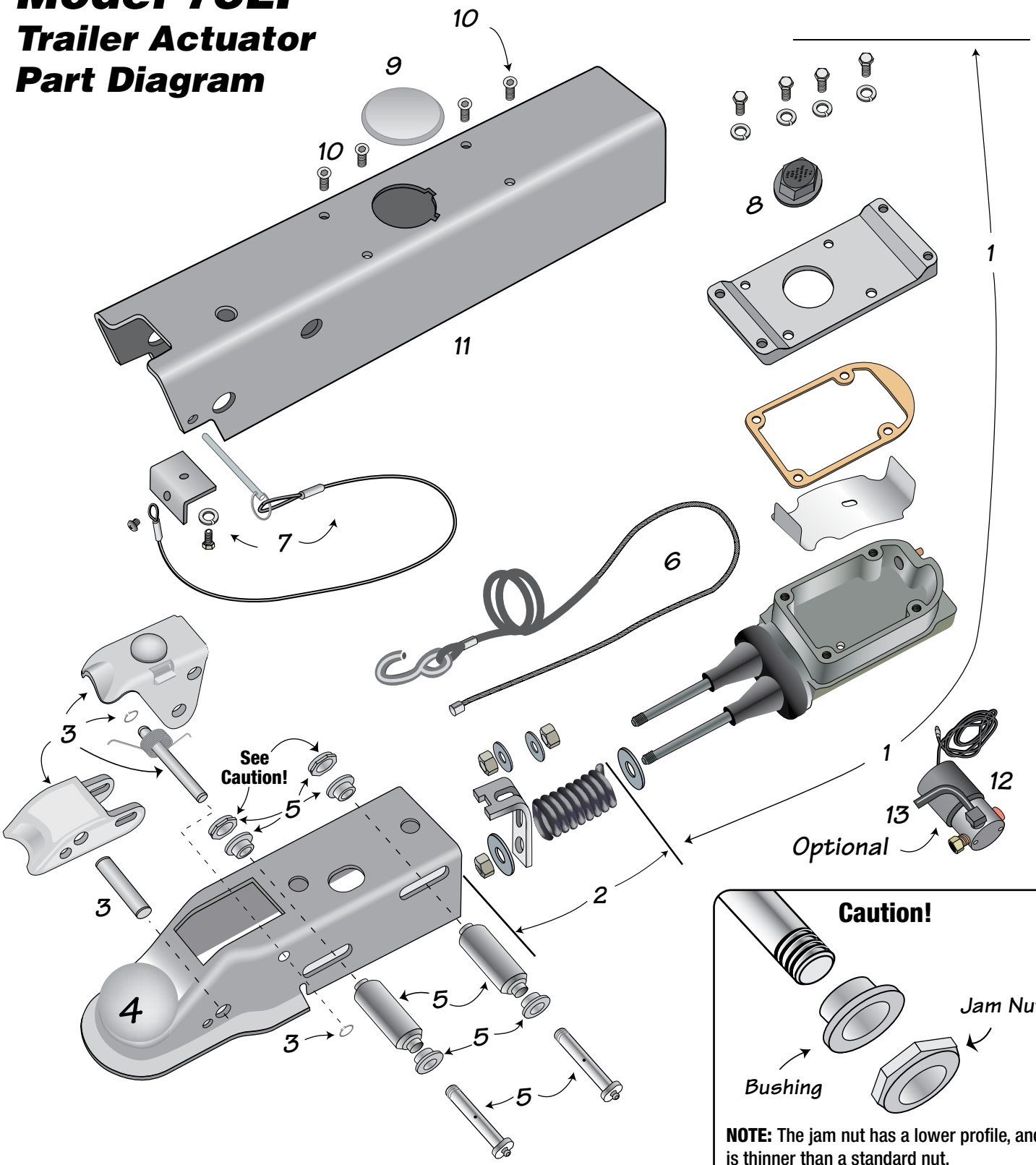
WARNING
A loose fit between the coupler and hitch ball can cause the actuator and hitch ball to separate, causing serious damage, injury or death. Check coupler every time prior to towing and at each stop on long trips. Always make certain that coupler latch safety pin is securely installed into coupler latch.

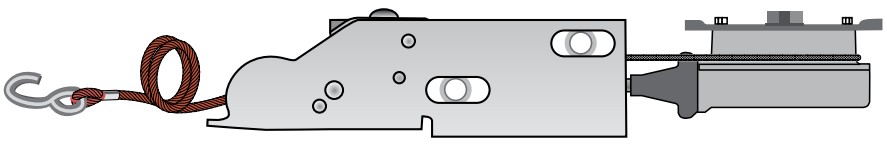
WARNING
Brake laws sometimes are minimum standards and you may wish to add additional brakes to your trailer. Read your tow vehicles owner's manual on towing capacity and other towing recommendations before installing brakes or this actuator.

WARNING

NEVER ALLOW THE COUPLER LATCH SAFETY PIN TO REMAIN IN THE REVERSE LOCKOUT POSITION HOLE. AFTER REVERSE MANEUVERING, ALWAYS INSERT COUPLER LATCH SAFETY PIN BACK INTO COUPLER LATCH. FAILURE TO REMOVE SAFETY PIN FROM REVERSE LOCK OUT POSITION HOLE WILL PREVENT FORWARD MOVEMENT BREAKING WHICH CAN RESULT IN SERIOUS PROPERTY DAMAGE, INJURY OR DEATH.

Model 75LP
Trailer Actuator Part Diagram





4 - Coupler Assembly/Latch Kit with Master Cylinder

Caution!

NOTE: The jam nut has a lower profile, and is thinner than a standard nut.
Caution! Do not use pneumatics with medium or high torque ratings! Use only low torque pneumatics, (1/4" drive butterfly or ratchet wrench recommended) Torque jam nylock nut to 15-20 ft/lbs MAXIMUM.

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Model 75LP Actuator Parts List

Item	Part #	Description	Quantity
1	47267 (Disc*)	Master Cylinder Assembly - Includes all nuts, baffle, all seals, O-rings, gaskets & seals (*check valve removed)	1
2	47259	Safety Stop & Spring	1
3	47254	Latch Kit Assembly Low Profile	1
4	17025 47258	Coupler Housing & Latch Kit(3) Low Profile Assembly Coupler Housing & Latch Kit(3) with Master Cylinder Assembly(1)	1
5	47255	Roller Kit includes - Includes all rollers, pins, bushings & nuts	1
6	50304	Cable Assembly (Breakaway)	1
7	47256	Safety Pin Cable with bracket & screws	1
8	48804	Master Cylinder Fill Cap with internal bladder	1
9	48759	Fill Cap Cover	1
10	12138	Button Head Torx Screws 1/4"-20 x1"	4
11	48762	Actuator Housing	1
12	11253A	Solenoid with Return Tube (optional)	1
13	11262	Solenoid Return Tube	1

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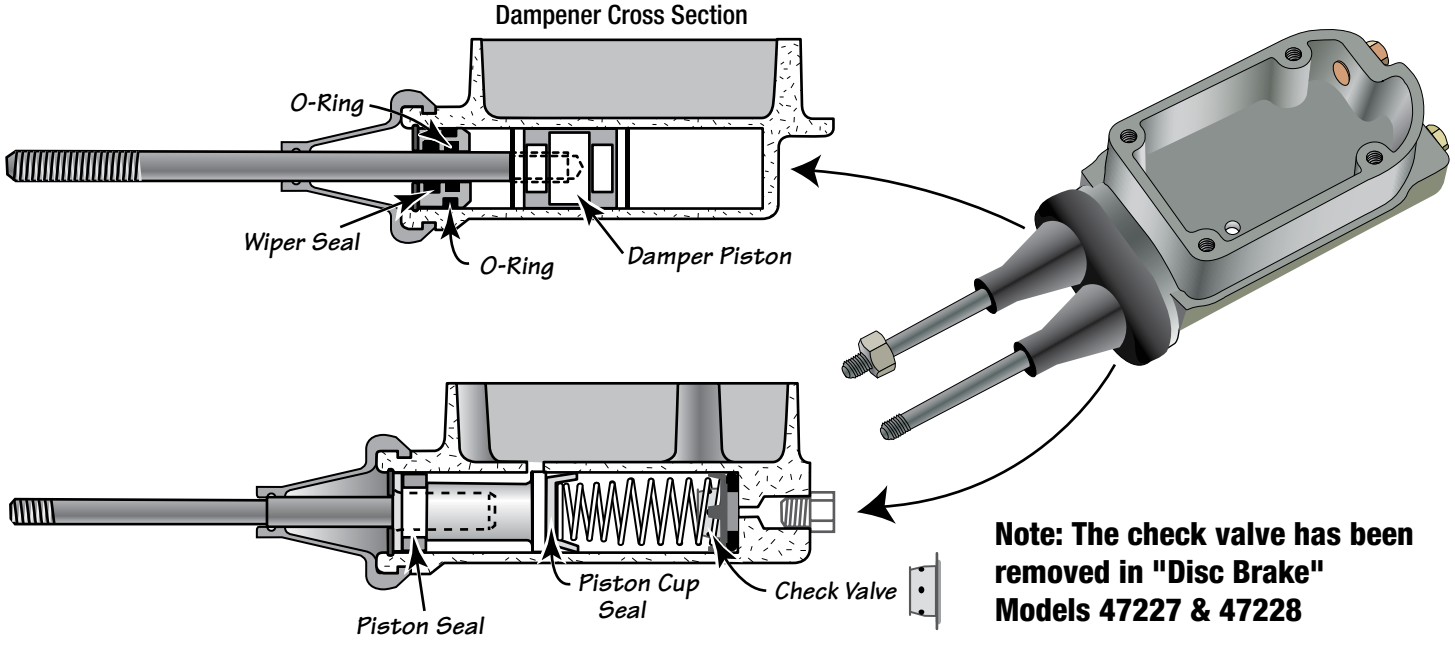
Master Cylinder Cross Section



Note: The check valve has been removed in "Disc Brake" Models 47227 & 47228

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Limited Warranty TIE DOWN ENGINEERING Inc ("TIE DOWN") warrants its products to be free from defects in material and workmanship for one year from date of delivery to the original purchaser when properly installed, used and maintained by the purchaser.

This warranty does not apply to damage or loss caused by any or all of the following circumstances or conditions:

- Damage caused during installation.
- Parts, accessories, materials or components used with or replacing any TIE DOWN braking system not obtained from or approved in writing by TIE DOWN.
- Misapplication, misuse and failure to follow the directions or observe cautions and warnings on installation, operation, application, inspection or maintenance specified in any TIE DOWN quotation, acknowledgement, sales literature, specification sheet or installation instruction and service manual ("applicable literature").
- Use of product in any other application other than those described in TIE DOWN's product information materials.

If any TIE DOWN products are found upon TIE DOWN's examination to have been defective when supplied, TIE DOWN will either: credit the purchaser's account for the purchase price of the TIE DOWN product; replace the TIE DOWN product; or repair the product.
TIE DOWN has sole discretion in choosing which option to provide. For this LIMITED WARRANTY to apply, TIE DOWN must receive notice of the alleged defect within 30 days of either the discovery of the alleged defect or the expiration of the warranty period, whichever is earlier. Any claim not made within this period shall conclusively be deemed waived.

If requested by TIE DOWN, purchaser shall return the alleged defective product to TIE DOWN for examination at purchasers expense. TIE DOWN will not pay for expenses incurred in returning a product to TIE DOWN without TIE DOWN's prior written authority. TIE DOWN shall not be liable for any other expenses purchaser incurs to remedy any defect. Purchasers waive subrogation on all claims under any insurance.

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To Obtain Technical Assistance: To enable TIE DOWN to respond to a request for assistance or evaluation of customer or user operating difficulty, please provide at a minimum the following information by calling 1-800-241-1806:

- Model number, serial number and all other data on the specific component which appears to be involved in the difficulty.
- The date and from whom you purchased your TIE DOWN product.
- State your difficulty, being sure to mention at least the following: Application, Nature of load involved, and Weight of the load.

Field Service If field service at the request of the purchaser is rendered and the difficulty is found not to be with TIE DOWN's product, the purchaser shall pay the time and expense (at the prevailing rate at the time of service) of seller's field representative (s). Charges for service, labor and other expenses that have been incurred by the purchaser, its customer or agent without prior written authorization of TIE DOWN will not be accepted.

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THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THOSE DESCRIBED ABOVE. EFFECTIVE JANUARY 2001 THIS WARRANTY SUPERSEDES ALL PRIOR WARRANTIES, WRITTEN OR IMPLIED.

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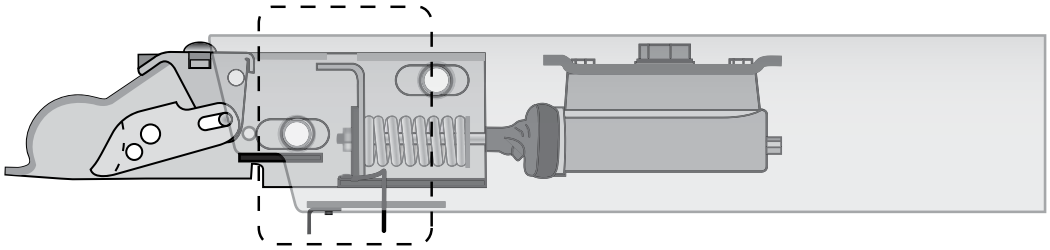
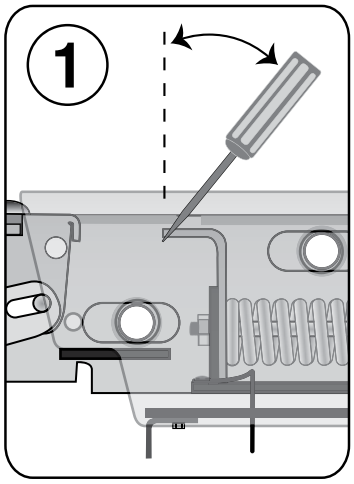
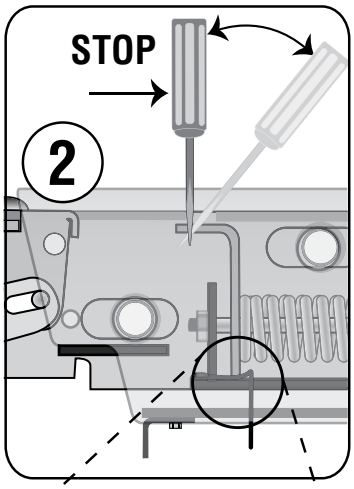
Instructions for Bleeding Tie Downs
Model 75LP Actuator

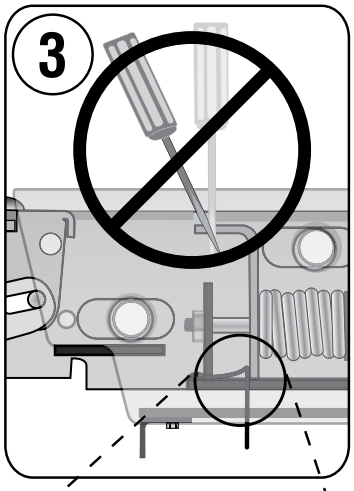




Tie Down's actuators feature a shock dampener that uses brake fluid from the master cylinder. The dampener must be primed before bleeding or using trailer. To prime the dampener, fill the master cylinder with DOT 3 brake Fluid. Push the coupler into the housing and slowly pull out 3 times, then refill master cylinder.

To pump master cylinder, insert a flat tip screwdriver into the round hole near the front of the actuator cover. (picture 1) Screwdriver tip will fit into the slot provided in the emergency brake bracket as shown. Push the screwdriver forward and back to pump the master cylinder. (picture 2)
IMPORTANT: Never go past 90 degrees (screwdriver straight up) when "pumping" the master cylinder (picture 3). Moving past 90 degrees will cause the emergency brake bracket to "set", locking into place creating constant pressure in the brake lines. If you find that the screwdriver will not go in place as shown when starting to pump the master cylinder, or you move the screwdriver past 90 degrees and feel it "snap into place", you must unlock the emergency brake bracket as shown in pictures 4 and 5.



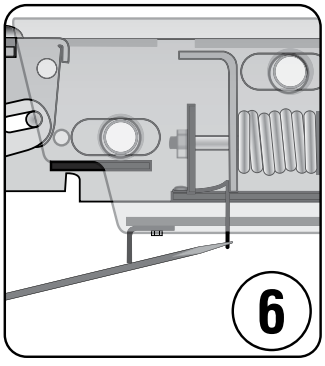


Underside Shown, looking up "OK"

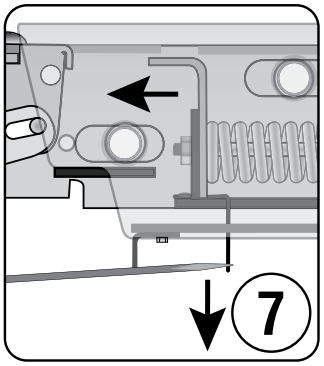
Underside Shown, looking up "Emergency Brake Set"

Pictures 4 & 5 show the underside of the actuator. If the oval slot where the emergency brake release tab comes out is "silver" (picture 5) and the release tab is pushed forward, this indicates that the emergency stop bracket is "set" and must be released before bleeding brakes or using the trailer. If the oval hole is "dark" (picture 4) and the release tab is free to move back, the emergency brake is ready to go, including bleeding and using the trailer.

Emergency Brake Engaged



Emergency Brake Disengaged



To release the emergency brake bracket, (pictures 6 & 7) insert a brake adjustment tool (looks like a bent screwdriver) or flat screw driver into the slot on the release tab (on bottom side of actuator) and pull down until a "click" noise is heard indicating the bracket is released.

After bleeding, make sure the emergecy stop is disengaged (figure 4 & 7).

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